BACKGROUND AND AFFECTED ENVIRONMENT

PROPERTY OVERVIEW

The Peshtigo River State Forest lies approximately 20 miles northwest of Crivitz, Wisconsin in central Marinette County. The Potato Rapids portion of the property—20 miles to the southeast of the rest of the forest—is approximately three miles north of the town of Peshtigo. Established in 2001, the Peshtigo River State Forest is the smallest of Wisconsin's northern state forests, comprising more than 9,200 acres. Bordering the newly-created Governor Thompson State Park, the property is long and linear in shape, and surrounds the Peshtigo River and associated flowages from Roaring Rapids to an area northwest of the Sandstone Flowage. The property borders approximately 25 miles of the Peshtigo River including: Caldron Falls Flowage, a 1,180-acre reservoir; High Falls Flowage, a 1,670-acre reservoir; Johnson Falls Flowage, a 158-acre reservoir; the Fly Fishing Stretch of the Peshtigo River; and Potato Rapids Flowage, a 281-acre reservoir located downstream.

Located in an area with abundant publicly owned lands including county forest lands, the Chequamegon-Nicolet National Forest, and the Governor Thompson State Park, the Peshtigo River State Forest is an excellent addition to the regional amenity base. Wisconsin Public Service Corporation (WPSC), a natural gas and electric utility, was the former owner of the property and still maintains ownership of property adjacent to Peshtigo River State Forest, most notably along High Falls flowage and Caldron Falls. Private landholdings are scattered along the current forest boundary.

The Peshtigo River has been identified as a Land Legacy Place by the Wisconsin Land Legacy Report (WDNR 2006). The Land Legacy Report identifies the places most important to meet Wisconsin's conservation and recreation needs over the next 50 years.

PAST MANAGEMENT AND USE

Roth (1898) noted that the southwestern portion of Marinette County had extensive tracts of jack pine, and that pine (white and red) had been cut over in much of the county at that time. He also noted that "large burned over wastes" existed throughout the county. The area that is now the Potato Rapids section of the Peshtigo River State Forest was within the area that was burned in the Great Peshtigo Fire in 1871.

The area that is now the Peshtigo River State Forest was heavily logged during the cutover period of the state, from the late 1800s into the early part of the 1900s. After the logging and subsequent fires, an even-aged forest of early successional species was established. Management was minimal through the 1950's, although some logging and small scale disturbance did occur. Starting in the 1950's and continuing into the 1970's, approximately 1400 acres of the property were planted to red pine. Some harvesting occurred in the 1970's and 1980's, regenerating some of the early successional types in even-aged stands. According to the WPSC Comprehensive Land and Wildlife Plan, the existing stands of Northern Hardwood types originated between 1920 and 1940.

Since construction in 1910, The Peshtigo River Hydroelectric Projects (consisting of Caldron Falls, High Falls, Johnson Falls, Sandstone Rapids, Peshtigo River and Potato Rapids Projects), was owned and managed by WPSC, or its' predecessor companies. Since the 1950s, it was managed under a "wild shores philosophy" starting when the first access roads and boat landings were built. This promoted multiple uses, but restricted shoreline uses to "keep it close to a natural state."

During the tenure of WPSC, the land was open to the public for recreation. The WDNR will continue to promote public recreation on these properties while protecting natural features. An integrated management plan will address such issues as sustainable forestry, wildlife, fish and non-game management as well as the development of recreational activities such as hunting, snowmobiling, hiking, and cross county skiing that are well established in the Peshtigo River State Forest.

PHYSICAL ENVIRONMENT

GEOLOGY, SOILS, AND TOPOGRAPHY

The Peshtigo River State Forest and surrounding areas are underlain by igneous, metamorphic, and volcanic rocks, with the exception of the area surrounding Potato Rapids that is underlain by carbonates. Igneous and metamorphic bedrock exposures are common throughout the Peshtigo River State Forest and surrounding landscape. The Peshtigo River State Forest, like the rest of the Athelstane Sandy Outwash and Moraines Subsection, formed under the center of the Green Bay Lobe during the latter part of the Wisconsin glaciation and was overwashed and reworked by outflow from the Langlade Lobe. The thickness of glacial drift over the bedrock varies from 0-100 feet deep. The thickest glacial drift deposits are found in the southern half of the forest (WDNR 1985). In some places, till is thin enough that bedrock characteristics directly affect vegetation and bedrock outcrops can be seen frequently throughout the forest, often forming ridges and knolls.

The surface of the Athelstane Sandy Outwash and Moraines subsection is predominantly outwash sand. Many parts of the outwash surface feature "collapsed" topography that formed when stranded blocks of glacial ice melted, and overlying outwash material collapsed into the depressions. Heads-of-outwash are distinctive landforms here; these hilly areas were formed at recessional positions of the Green Bay Lobe when ice was melting and thinning rapidly. In places where large amounts of sand and gravel were deposited atop the thin edge of the ice sheet, and when the ice melted, a head-of-outwash ridge remained.[1]

The soils of much of the Peshtigo River State Forest and surrounding areas are excessively drained and sandy. Common soils in the area of the Peshtigo River State Forest are of the Menahga Association, with significant areas of Pence-Padus Association closer to the Forest County line. There are scattered areas of the following associations: Mancelona-Emmet-Menahga, and Sarona-Keweenaw. The main soil associations in the lower stretches of the Peshtigo River are Wainpola-Deford and Cunard-Emmet (USDA 1991). However, the Subsection also includes remnant loamy end moraines and ground moraines that were not completely buried by outwash materials. These areas are among the few in the immediate area that support mesic hemlock hardwood or Northern Hardwood forests. Kettle lakes are few. Most of the lowland soils are very poorly drained acid peats or non-acid mucks, and are currently occupied by bogs, sedge meadows, shrub swamps, and lowland forests.

[1]See Wisconsin Landtype Associations, 2005

WATER RESOURCES AND AQUATIC HABITATS

LAKES AND STREAMS

Large natural lakes are few in this area, although there are a few examples of undeveloped or nearly undeveloped natural lakes in or near the Peshtigo River State Forest. High Falls (1,670 acres) and Caldron Falls (1,180 acres) flowages are the second and third largest "lakes" within the Upper Green Bay Basin. The largest lake, Lake Noquebay (2,049 acres) is located within 10 miles of the state forest. The significance of Caldron and High Falls flowages cannot be overstated. These water bodies are a huge draw for water-based recreational activities within the region. Potato Rapids has less motorized water recreation associated with it than the other flowages and a greater concentration of waterfowl hunting and fishing.

Caldron Falls Reservoir was designated as an Outstanding Resource Water in 1996. An Outstanding Resource Water is designated from a set of criteria that determines it to be an area that requires special protection due to it's water quality and it's ability to support a diverse array of plants, fish, wildlife and other animals, both in the water and the riparian zone. Caldron Falls scored the highest score on Riparian Zone Habitat due to its vast amount of undeveloped shoreline (greater than 80%) with few areas of human disturbance. Any development around Caldron Falls can not degrade the water quality or reduce any of the initial criteria that were met for its Outstanding Water Resource designation. Only four impoundments in the State of Wisconsin have met the required criteria to become an Outstanding Water Resource.

There are also numerous Class I, II, and III trout streams within the region and the state forest that offer some of the State's best trout fishing.

UPLAND AND LOWLAND VEGETATION AND NATURAL COMMUNITIES OR HABITATS

A variety of tools are available to land managers engaged in forest planning and management. Using multiple sources of data, managers are better able to assess site capabilities, identify ecological and silvicultural alternatives, predict the effectiveness of possible silvicultural treatments, evaluate feasible management alternatives, and choose appropriate management objectives. These tools are an integral part of the master planning process and are used for sound forest management. A description of each source is provided below:

- The General Land Office's Public Land Survey data (GLO PLS) was utilized to assess historic vegetation. These surveys conducted between the 1830s and 1870s, divided the state into 6 by 6 mile townships and 1 by 1 mile sections so that the land could be homesteaded. In order to mark the corners of each section, the surveyors blazed up to 4 witness trees around the corner, and noted tree species, diameter, and distance and direction from the corner post. While the intent of these surveys was not ecological in nature, it does provide researchers with some ecological data about species composition and tree density at the time of the surveys.

- WISCLAND land use/land cover data are a source of generalized information on vegetation. These data were developed by the WDNR with support from a consortium of other users. The data are an interpretation of the state's land cover from LANDSAT satellite images taken in 1992. This vegetation classification provides non-detailed information on several categories of forested and non-forested land.

- Wisconsin DNR Forest Reconnaissance provides data at the stand level and current composition, but does not provide data on successional trends.

- Forest Inventory and Analysis (FIA) data from the U.S. Forest Service are primarily used to assess the timber resource.

- The FIA uses statistical sampling at selected plots. These are the most accurate data for showing amounts (acreage and volume) of different forest types at the county level or a larger area. The data are not presented spatially, although information from sample points has occasionally been extrapolated to produce forest type maps.

- The Forest Habitat Type Classification System (FHTCS)[2], The FHTCS identifies potential climax associations based on repeating patterns in the composition of the understory vegetation and different understory species. Individual forest cover types usually encompass a wide range of environmental conditions and do not accurately reflect site potential or respond predictably to given management techniques.

[2]See A Guide to Forest Communities and Habitat Types of Northern Wisconsin (2002) by Kotar.

UPLAND AND LOWLAND VEGETATION AND NATURAL COMMUNITIES OR HABITATS

- Natural Heritage Inventory (NHI)[3] The NHI programs focus on rare plant and animal species, natural communities, and other natural features. The Wisconsin NHI Working List is the official list of Endangered, Threatened, and Special Concern plants and animals for Wisconsin. The Working List also includes a list of natural communities known to occur in Wisconsin. The list changes over time as the populations of species change and as knowledge about species status and distribution increases.

HISTORIC VEGETATION

Based on Finley's (1976) interpretation of the GLO PLS records, the lands comprising the Peshtigo River State Forest and surrounding landscape were vegetated with Pine or Oak Barrens, and interspersed with stands of lowland conifer forest and hemlock-dominated Mesic Forest. The northern stretches of the river that currently flow through portions of the Marinette County Forest were dominated by northern hardwoods, hemlock-hardwoods, and pine.

GLO PLS records indicate that much of the surrounding area was open with widely spaced trees that commonly included small diameter red pine and jack pine. Aspen and tamarack were common in some areas. Fires were historically common in this landscape, owing to the dry sandy soils, fire adapted vegetation, and the relatively level or rolling terrain which had few major water or wetland barriers.

CURRENT VEGETATION AND NATURAL COMMUNITIES

The Peshtigo River State Forest and surrounding area are mostly forested. Deciduous forests (aspen, oaks, maples) are the most widespread and are interspersed with small areas of upland and lowland conifer forests, wetlands and grasslands. Agricultural lands are common just south of the Peshtigo River State Forest near the city of Crivitz.

Based on the most recent Forest Reconnaissance data for the Peshtigo River State Forest[4] , aspen is the most common cover type, comprising 27% of the forest, followed by scrub oak (25%), red pine (11%), undifferentiated oak (9%), red maple (8%), and jack pine (4%). Swamp conifers and hardwoods, spruce-fir, and white pine cover types make up the remaining acreage. At that time, forests were mostly comprised of small size classes, including poles (83%) and saplings (16%); small and large sawtimber together made up 2% of the acreage of the larger forest size classes in the Peshtigo River State Forest and were limited mainly to the steep slopes adjacent to the Peshtigo River. These slopes support several distinct forest communities, and contain seeps that sometimes harbor rare plants and interesting plant assemblages.

Using The Forest Habitat Type Classification System (FHTCS) the forest communities on the Peshtigo River State Forest are as follows: PArV-Ao *(Pinus strobus-Acer rubrum/ Vaccinium angustifolium-Apocynum androsaemifolium),* PArV-Po *(Pinus strobus-Acer rubrum/ Vaccinium angustifolium-Polygonatum pubescens),* and AVb *(Acer saccharum/ Viburnum acerifolium).* These communities are especially well-suited for management of pine (jack, red, and white), although red maple is well-represented in advanced regeneration. Red and white pines have the best growth potential, whereas red oak and red maple sawtimber is more modest. Pines are best suited for wood production, but the maintenance of deciduous tree populations is desirable for both wildlife habitat and soil nutrients.

UNIQUE HABITATS AND FEATURES

Key ecological features as identified by the Biotic Inventory include scattered outcroppings of igneous bedrock; small, remnant stands of the severely diminished Pine or Oak Barrens community; several floristically rich stands of Northern Wet-mesic Forest (white cedar swamps); and occurrences of older stands of Northern Dry-mesic Forest (white pine, red pine, red oak, red maple) on the steep slopes flanking the river[5]. Table 3.1 lists community types within the Peshtigo River State Forest. Other community types are also present, but are represented by stands that are too small, too highly disturbed, or

TABLE 3.1 NATURAL HERITAGE INVENTORY COMMUNITY TYPES WITHIN PESHTIGO RIVER STATE FOREST

COMMUNITY TYPE	YEAR	STATE RANK	GLOBAL RANK
Northern Dry-mesic Forest	2003	S3	G4
Northern Wet-mesic Forest	2003	S3S4	G3
Stream—Fast, Hard, Cold	2003	S4	GNR

[3] The most recent NHI information for Wisconsin is available at (www.dnr.state.wi.us/org/land/er/).
[4] Reconnaissance data is from 1989 but has been partially updated.
[5] Community descriptions can be found at http://dnr.wi.gov/org/land/er/communities.
[6] For more information on global and state ranking see http://dnr.wi.gov/ org/land/er/wlist/.

too altered to warrant inclusion in the NHI database. The state rank of a community type or species is related to the number of occurrences found in the state and ranges from critical (S1) to relatively stable (S5)[6]. For example, the S3 ranking of the communities listed below indicates that they are rare or uncommon in Wisconsin. The table below summarizes the types of natural community occurrences on the Peshtigo River State Forest.

Of those NHI community types found on the Peshtigo River State Forest, The Ecological Landscapes of Wisconsin Handbook—Ecological Opportunities Table designates Northern Dry-mesic Forest, Northern Wet-mesic Forest and Coldwater Streams as Major Opportunities for the Northeast Sands Ecological Landscape. A Major Opportunity is defined as a community type that is represented by many significant occurrences within an Ecological Landscape (EL), or that the EL is appropriate for major restoration activities.

THREATENED, ENDANGERED AND SPECIAL CONCERN PLANT SPECIES

Twelve rare plant species from the NHI Working List have been documented in or around the Peshtigo River State Forest, including one State Threatened species, dwarf milkweed (Asclepias ovalifolia). One species that was known only from historical records, blue ridge blueberry (Vaccinium pallidum), was also found. Most of the rare plants found within the Peshtigo River State Forest and adjacent areas are associated with either dry uplands (including barrens remnants, dry forests, and Bedrock Glades) or wetlands, both forested and open types. Three of the 12 species are associated with Northern Dry-mesic and Northern Mesic forests.

TABLE 3.2 NATURAL HERITAGE INVENTORY WORKING LIST PLANTS IN PESHTIGO RIVER STATE FOREST AND SURROUNDING AREA

SCIENTIFIC NAME	COMMON NAME		YEAR	STATE RANK	GLOBAL RANK	STATE STATUS
Arabis missouriensis var. deamii	Deam's Rockcress		2003	S2	G4G5QT3?Q	SC
Arethusa bulbosa	Swamp-pink	*	1991	S3	G4	SC
Asclepias ovalifolia	Dwarf Milkweed		2003	S3	G5?	THR
*Carex assiniboinensis***	Assiniboine Sedge	*	1981	S3	G4G5	SC
Carex vaginata	Sheathed Sedge	*	2003	S3	G5	SC
Cypripedium reginae	Showy Lady's-slipper	*	2003	S3	G4	SC
*Epilobium palustre***	Marsh Willow-herb	*	2003	S3	G5	SC
Malaxis monophyllos var. brachypoda	White Adder's-mouth	*	1992	S3	G4Q	SC
Medeola virginiana	Indian Cucumber-root		1997	S3	G5	SC
*Platanthera hookeri***	Hooker Orchis		1960	S2S3	G5	SC
Platanthera orbiculata	Large Roundleaf Orchid		2003	S3	G5?	SC
Vaccinium pallidum	Blue Ridge Blueberry		2003	S1	G5	SC

* Species associated with wetlands or aquatic features
** Species not located within the Peshtigo River State Forest
**** State & Global Ranks are used to indicate a species

WILDLIFE RESOURCES

The property supports a healthy and diverse wildlife population that includes eagles, osprey, deer and bear. There are numerous aquatic species associated with the river and its associated wetlands, including the northern clearwater crayfish, bullfrog, and wood turtle. According to the Wisconsin Breeding Bird Atlas, 99 different species of birds are either confirmed to be breeding or probable to be breeding in the three 7.5 minute USGS topographic quadrangles that encompass the Peshtigo River State Forest.

High deer densities are well-documented in the state and present many risks to the long-term health of northern forests. Pre-European settlement deer densities in northern Wisconsin were thought to range between 5 and 10 deer per square mile (Alverson et al., 1988). Of late, higher densities in the region have led to severe damage to understory plants, tree reproduction, and a reduction in the habitat for birds and small mammals. Managing deer numbers will be important to achieving forest management objectives.

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES AND HABITATS

Nineteen rare animal species have been documented in the Peshtigo River State Forest and surrounding areas, including one State Endangered, four State Threatened species, and the Federally Threatened Bald Eagle (Table 3.3). A timber wolf pack—listed as Federally Threatened—is known just north of the Peshtigo River State Forest, and there is another known occurrence just outside the northern end of the forest[7]. The majority of rare animals documented within the Biotic Inventory's study area are associated with aquatic or wetland habitats. The Peshtigo River provides important habitat for many of these species including five that are globally rare. The dry uplands are also important for some species including a rare tiger beetle. Only one nest territory for the Northern Goshawk was located on the Peshtigo River State Forest. The property lacks large tracts of mature, closed-canopy forest needed to sustain this and other rare birds, including the Red-shouldered Hawk. However, there are areas on the forest that could provide future opportunities to benefit these species.

[7] For more information on timber wolves in Wisconsin see: dnr.wi.gov/org/land/er/mammals/wolf/

TABLE 3.3 NATRUAL HERITAGE INVENTORY WORKING LIST ANIMALS FOUND IN THE PESHTIGO RIVER STATE FOREST AND ADJACENT AREAS

SCIENTIFIC NAME	COMMON NAME		YEAR	STATE RANK	GLOBAL RANK	STATE STATUS	FEDERAL STATUS
BEETLE							
*Cicindela patruela patruela***	A Tiger Beetle		2002	S2	G3T3	SC/N	
BIRD							
Accipiter gentiles	Northern Goshawk		2002	S2B,S2N	G5	SC/M	
Haliaeetus leucocephalus	Bald Eagle	*	2002	S3B	G4	SC/FL	LT, PD
Pandion haliaetus	Osprey	*		S3S4B	G5	Thr	
BUTTERFLY							
*Pieris virginiensis***	West Virginia White	*	2002	S3	G3G4	SC/N	
CRUSTACEAN							
Oronectes propinquus	Northern Clearwater Crayfish	*			SUG5	SC/N	
DRAGONFLY							
Gomphurus lineatifrons	Splendid Clubtail	*	1991	S3	G4	SC/N	
*Gomphurus ventricosus***	Skillet Clubtail	*	2002	S3	G3	SC/N	
Gomphus quadricolor	Rapids Clubtail	*		S4	G3G4	SC/N	
Gomphus viridifrons	Green-faced Clubtail	*		S3	G3	SC/N	
Nasiaeschna pentacantha	Cyrano Darner	*	1988	S3	G5	SC/N	
Neurocordulia yamaskanensis	Stygian Shawdowfly	*		S3	G5	SC/N	
Ophiogomphus anomalus	Extra-striped Snaketail	*		S1	G3	END	
Ophiogomphus carolus	Riffle Snaketail	*	1980	S3	G5	SC/N	
Ophiogomphus howei	Pygmy Snaketial	*		S3	G3	THR	
FROG							
Rana catesbeiana	Bullfrog	*	2003	S3	G5	SC/H	
SALAMANDER							
*Hemidactylium scutatum***	Four-toed Salamander	*	2003	S3	G5	SC/H	
TURTLE							
Clemmys insculpta	Wood Turtle	*	2003	S3	G4	THR	
*Emydoidea blandingii***	Blanding's Turtle	*	2002	S3	G4	THR	

* Species associated with wetlands or aquatic features.

** Species not located within the Peshtigo River State Forest.

WILDLIFE RESOURCES

The Wisconsin Wildlife Action Plan designates species of greatest conservation need based on several factors, and classifies them based on their likelihood of occurring in a given Ecological Landscape (please refer to dnr.wi.gov/org/land/er/wwap for more information). Given the natural community types listed as occurring in the Peshtigo River State Forest from the Biotic Inventory, Table 3.3 lists the animals with a high or moderate probability of occurring in the Northeast Sands, and are associated with community types designated as Major Opportunities that occur in the Peshtigo River State Forest. Managers should be cognizant that healthy natural communities support a wide variety of different species, and maintenance of healthy natural communities may encourage the success of many species.

TABLE 3.4 SPECIES OF GREATEST CONSERVATION NEED AND ASSOCIATED NATURAL COMMUNITIES IN THE NORTHEAST SANDS ECOLOGICAL LANDSCAPE

	ASSOCIATED NATURAL COMMUNITY TYPES THAT OCCUR IN THE PRSF	SPECIES WITH A HIGH PROBABILITY OF OCCURRING IN THE NORTHEAST SANDS	SPECIES WITH A MODERATE PROBABILITY OF OCCURRING IN THE NORTHEAST SAND
MAJOR OPPORTUNITIES	Northern Dry-mesic Forest	Whip-por-will	Northern Goshawk
		Least Flycatcher	Red-shouldered Hawk
		Veery	Canada Warbler
		Golden-winged Warbler	Gray Wolf
	Northern Wet-mesic Forest	Water Shrew	Canada Warbler
		Northern Flying Squirrel	Four-toed Salamander
		Wood Turtle	Pickerel Frog
			Woodland Jumping Mouse
			Gray Wolf
	Coldwater Streams	Water Shrew	Solitary Sandpiper
		Mudpuppy	Four-toed Salamander
		Mink Frog	Pickerel Frog
		Wood Turtle	Blanding's Turtle

RECREATIONAL FACILITIES AND USE

EXISTING FACILITIES AND SERVICES

While the forest supports a wide range of recreational activities, it has surprisingly few designated facilities and trails. Trails are designated for mixed-use including hiking, off-road cycling, cross-county skiing and snowmobiling, to name a few. There are limited opportunities for ATV-riding on the property, but extensive ATV trails exist to the north and south. There are a wide range of authorized recreational activities on the Peshtigo River State Forest. Many are seasonal, such as snowshoeing and berry-picking, but other activities, like hiking and wildlife watching can be enjoyed all year. The following list of authorized activities provides an overview of the recreational opportunities found on the Peshtigo River State Forest: boating/personal watercraft use, cross-country skiing, snowmobiling, hiking, camping, off-road bicycling, snowshoeing, canoeing/kayaking, berry picking, and swimming.

CAMPING

Adjacent to the state forest, 62 campsites are currently located within the county-owned Twin Bridges Park on High Falls Flowage. There are also 16 sites in place at Old Veteran's Lake Rustic Campground. In addition, there are ten primitive remote canoe campsites located on three different areas on Johnson Falls, Seymour and Spring Rapids areas. These sites are accessible only by water, stays are limited to one night and they cannot be reserved. The WPSC did not designate any other primitive canoe campsites along this reach, but camping continues to occur. There will also be recreational facilities on Governor Thompson State Park including: a 70 unit rustic campground, 3 walk-in primitive campsites, and an outdoor and indoor group campsite.

WATER RECREATION

Due to the scarcity of large inland lakes in the region, the Peshtigo River State Forest plays a major role in water recreation, as evidenced by the many boat landings on the property. Water recreation is supported by 15 boat landings with new cement planks (Table 3.5). The vehicle/trailer capacity of these boat landings ranges from 7-40, but most can accommodate approximately 20 vehicles/trailers.

Swimming is a very popular activity on the Peshtigo River State Forest despite the lack of designated beaches. As a

TABLE 3.5 BOAT LANDING CAPACITY AND AMENITIES

BOAT LANDING NAME	CEMENT PLANK	CAR/TRAILER CAPACITY	PICNIC TABLE	BOARDING DOCK
West Bay (Landing 1)	X	15		X
Bass Bay (Landing 2)	X	10		
East Bay (Landing 3)	X	20		
Twin (Landing 4)	X	20		
Channel (Landing 5)	X	20		X
Woods Creek (Landing 6)	X	30		X
Rock Cove (Landing 7)	X	40	X	X
Caldron Bay (Landing 8)	X	25	X	X
Musky Point (Landing 9)	X	30	X	
North Bay (Landing 10)	X	15		
Crandall Creek (Landing 11)	X	15		
Roaring Rapids (Landing 12)	X	20		
Thunder (Landing 14)	X	15		
Peshtigo (Landing 1)	X	7		
Potato Rapids (Landing 1)	X	15	X	X

result, swimming often occurs on or near boat launches as well as other areas along the river. There are no designated swim areas owned and operated by the State Forest; however, the Town of Stephenson Park on High Falls Flowage does have a designated swimming area and other amenities.

Motorized recreational boating is more common on the flowages within the Peshtigo River State Forest than on Potato Rapids, although canoeing/kayaking is popular in both areas. This may be due to the small size of Potato Rapids and the lack of access points. Although it has two boat landings, Potato Rapids is not subject to the same recreational pressures seen on the other flowages. With only 288 acres of water and islands, this area is ideal for fishing, hunting, and canoeing.

FISHING

The upper reaches of the Peshtigo River are characterized by two flowages—Caldron Falls and High Falls. These flowages support a good fishery for muskellunge, walleye, bass and panfish. The forested shorelines feature numerous scenic rock outcrops and islands. The Johnson Falls Flowage lies downstream from High Falls Flowage and exhibits a narrower river channel, steeply wooded banks and an excellent fishery. The Fly Fishing Stretch of the Peshtigo River offers some of the most scenic trout fishing in the Midwest. The Potato Rapids Flowage near the city of Peshtigo is a scenic flowage with an associated marshland habitat that also supports a warm water fishery.

TRAILS

The Peshtigo River State Forest has approximately 20 miles of snowmobile trails (which are also used by ATVs in winter), 1 mile of ATV trail, and approximately 8 miles of cross country ski trails. There are approximately six miles of designated public access roads, portions of which are used in winter for snowmobiling or skiing. There are currently no mountain bike, nature, or other types of trails designated on the property.

SOCIAL/CULTURAL RESOURCES

LAND OWNERSHIP

There are no private in-holdings within the property boundary, but much of the property is surrounded by private property, including a few large pieces retained by WPSC. This may pose difficulties for potential boundary expansion proposals and management decisions. There are also numerous public lands near the Peshtigo River State Forest, including local, county, state and federal lands. There are also no private land in-holdings at Potato Rapids, but it is largely surrounded by private property.

HISTORICAL/ARCHEOLOGICAL

Work completed by WPSC for the Federal Energy and Regulatory Commission (FERC) re-licensing program found evidence of historical and archaeological resources within the region. The WPSC identified eight previously recorded prehistoric and historic sites. Field reconnaissance found 55 sites along the shorelines, of which 22 are affected by either hydro project operations or public recreation. Most sites have late Woodland (Native American) components dating from A.D. 500 to 1634. The Johnson Falls, High Falls and Caldron Falls hydroelectric dams and powerhouses are eligible for inclusion into the National Register of historic places.

As part of the 1837 and 1842 treaties, the Native Americans gave up timber harvesting rights. However, they retained the rights to such activities as hunting and fishing, as well as the gathering of firewood, boughs, tree bark, lodge poles, marsh hay, wild rice, and maple syrup. These activities are retained because it has been determined by the courts that they are usual and customary activities of the Chippewa at the time the treaties were signed.

ADMINISTRATIVE AND OTHER FACILITIES

There are currently no designated administrative or maintenance facilities on the forest.

The forest has approximately 20 miles of maintained recreational trails and 6.0 miles of public access roads. These trails and roads will continue to be maintained by DNR for public use and recreational access.

REGIONAL CONTEXT

LAND OWNERSHIP AND LAND-USE PATTERNS

The Peshtigo River State Forest is located almost entirely within Marinette County, with a small portion in Oconto County (Map 3.5–Regional Ownership). This area of northeastern Wisconsin is predominately rural with a natural resource and tourism based economy. This area supports a large natural amenity base that attracts many tourists and seasonal homeowners. The main body of the forest is near the Village of Crivitz and about 55 miles north of Green Bay. The property resides almost entirely within the Township of Stephenson. Smaller portions of the State Forest are located in the Towns of Silver Cliff and Porterfield in Marinette County and the Town of Lakewood in Oconto County.

Over 28% of Marinette County is under public ownership, with approximately 231,000 acres of county forests and parks and 15,000 acres of DNR managed land, including wildlife areas, wild river areas, fisheries, state natural areas, and a state park. Non-profit conservation organizations and other public ownership account for the remaining 8,000 acres of recreational lands open to public use. There are 444 natural and man-made lakes in the county totaling 16,260 surface acres. There are very few large lakes (defined as greater than 50 acres) within Marinette County and surrounding region. Because of this, there is high demand for the sizable waters of the Peshtigo's flowages for recreation. This area is also known for its high concentration of trout streams.

Public lands are common in northeastern Wisconsin. The largest of these holdings are within federal and county forests, which comprise approximately 1 million acres of land. Listed below are the largest public land holdings within a 50 mile radius of the state forest (including Upper Michigan):

Wisconsin

- Marinette County Forests: 231,596 acres. Multiple recreational opportunities exist on these lands from water access sites to developed campgrounds.

- Oconto County Forests: 41,980 acres with the majority abutting the Nicolet National Forest. Camping, fishing and water accesses are available within this forest.

- Florence County Forests: 36,363 acres. Hiking, snowmobiling, ATV, and canoeing are popular activities. The forest also has two public campgrounds.

- Forest County Forests: 10,808 acres. ATV, snowmobiling, hunting and wildlife viewing are promoted on these lands.

- Chequamegon-Nicolet National Forest: covers nearly 661,400 acres in Florence, Forest, Langlade, Oconto, Oneida, and Vilas counties. Abundant trail and camping opportunities exist upon this property.

- Governor Thompson State Park totals 2,600 acres. It abuts the state forest and lies on the Caldron Falls Reservoir. Currently under development, the park will offer family camping, indoor and outdoor group camps, environmental educational programs, and a trail network for biking, hiking and skiing.

Michigan

- Copper Country State Forest: 430,000 acres over a seven county area. The southern fringe of this property (Dickinson County) abuts Marinette County. Wide ranges of motorized and non-motorized recreational activities occur on this property.

- Escanaba River State Forest: 416,000 acres. The southern fringe of this property (Dickinson County) also abuts Marinette County. The forest offers access to both Lake Michigan and other forestlands with camping, ATV, and non-motorized trail usage.

REGIONAL TRANSPORTATION NETWORK

The state forest is located approximately 50 miles from Green Bay, 110 miles from Oshkosh, and 160 miles from Milwaukee. State Highways 141, 41, and US Interstate 43 provide easy and efficient access to the region and forest. A number of township roads provide access to the state forest. County Highways X, C and W provide the backbone for transportation to the property. The majority of these township roads are paved, although a few are gravel. Potato Rapids is accessible from State Highway 64 and numerous township roads.

BIOLOGICAL RESOURCES AND ECOLOGICAL NEED

REGIONAL GEOLOGY AND SOILS

The Peshtigo River State Forest and its surrounding region sit on the southern edge of the Precambrian Shield, often referred to as the Canadian Shield. It's an area of vast igneous, metamorphic and sedimentary bedrock that covers most of northern Wisconsin, northern Minnesota, Michigan's Upper Peninsula and nearly all of central and eastern Canada. However, unlike the dominantly rocky landscape of Northern Minnesota and Canada, only occasional granite outcrops and knobs are visible here along rivers, streams, and other select locations. This southern edge of the shield is buried under 100 feet of glacial till and ground moraine derived from granite and locally abundant dolomite from formations miles to the east.

Glacial deposits in the region of the state forest include north-south terminal moraines, ground moraine, lake sediments from Glacial Lake Michigan, pitted and unpitted outwash, and sand dunes. Soils on the outwash plains area are excessively well-drained sands, while somewhat richer sandy loams and loamy sands dominate the moraines. This is reflected in the high level of soil permeability for most upland soils here, generally in the range of 2.5 to 5.0 inches per hour. For comparison, soils formed from the glacial lake sediments near the city of Peshtigo have higher clay content and a permeability rate of only 0.8 to 0.05 inches per hour.

In Marinette County, the majority of the soils (68 %) were formed in glacial outwash and till. As such, they created a complex topography of well drained soils interspersed with pockets of poorly drained soils. Slopes vary from 0 to about 30 %. Looking more closely at the Peshtigo River State Forest, more than three-quarters of the soils of the state forest and surrounding lands are strongly associated with the drought and fire adapted Pine or Oak Barrens natural communities (the Menahga and Mancelona-Emmet-Menahga soil associations).

Most of the remaining soils in Marinette County are richer with more water holding capacity as they were formed in glacial till. The Northern Wet–Mesic Forest natural community, which typically supports hemlock, white pine, sugar maple and red oak, is generally associated with this soil type. These areas are mostly located north of Caldron Falls Reservoir.

ECOLOGICAL SETTING AND CAPABILITY

The majority of the Peshtigo River State Forest is located in the Northeast Sands Ecological Landscape. From the NHFEU, the unit most relevant to the Peshtigo River State Forest and surrounding lands is subsection 212Tc (Athelstane Sandy Outwash and Moraines). In the NHFEU, this Subsection is further divided into a number of Landtype Associations (LTAs). The LTAs that comprise Subsection 212Tc are differentiated primarily by their geomorphology. Morainal remnants and heads-of-outwash make up one group of LTAs, while outwash plain LTAs make up another, and a third group is formed in glacial lake plains.

According to the Ecological Landscapes of Wisconsin Handbook, the Northeast Sands Ecological Landscape was historically extensive oak/jack pine barrens and jack pine forests, found in the outwash sand portions of this Ecological Landscape. Moraines supported forests of hardwoods, red pine, and white pine. Outwash plains often contained pitted depressions, resulting in numerous wetlands and kettle lakes.

Most of the Northeast Sands is still forested (Figure 3.1); aspen predominates, followed by northern hardwoods. Jack pine remains on the outwash plains along with northern pin oak (scrub oak). There are several important occurrences of jack pine/oak barren communities, although there are none noted in the Peshtigo River State Forest. A small percentage of this Ecological Landscape contains spruce-fir-cedar forest and lowland hardwood forest. The Brazeau Swamp, a Land Legacy Place directly south of the Peshtigo River State Forest lying mostly within the Marinette County Forest, is one of the best representations of large cedar swamp forests in northern Wisconsin.

Of those NHI community types found in this area, The Ecological Landscapes of Wisconsin Handbook—Ecological Opportunities Table designates Northern Dry-mesic Forest, Northern Wet-mesic Forest and Coldwater Streams as "Major Opportunities" for the Northeast Sands Ecological Landscape, and designates Northern Mesic Forest, Northern Wet Forest, Bedrock Glade and Open Bog as "Important Opportunities." A Major Opportunity is defined as a community type that is represented by many significant occurrences within an Ecological Landscape (EL), or that the EL is appropriate for major restoration activities. An important opportunity means that a community type is not extensive or common in an EL but has a minimum of one to several significant intact occurrences that should be considered for protection and/or management. It may also mean that the natural community type is restricted to just one or a few Ecological Landscapes within the state and should be considered for management there because of limited geographic distribution and a lack of opportunities elsewhere.

The Northeast Sands contains several important river systems (other than the Peshtigo) as well as extensive wetlands. The Menominee is the largest, located on the Michigan-Wisconsin border. Several wild rivers in the landscape are the Wolf, Pine, Popple, and Pike. Extensive wetlands, including in the Peshtigo Brook State Wildlife Area, are found here. The Northeast Sands has high levels of watershed pollution, with three of five watersheds classified as highly polluted. Its lakes, though few, ranked second worst in pollution levels among all of the Ecological Landscapes.

The globally rare Pine and Oak Barrens were much more common in the region prior to European settlement. This savanna community is characterized by scattered jack pine or a mixture of scrub oak and white oak, interspersed with shrub-dominated openings.

Fire suppression has played a key role in the decline of barrens in the area. Following fire suppression efforts of the mid-1930s, Pine and Oak Barrens almost entirely disappeared. Some stands have grown into dense, 40-50 foot tall stands of jack pine; others have been clearcut and planted to red pine plantations. Still other stands with an aspen component were clearcut and have become nearly pure aspen, while other stands had jack pine harvested for pulp and are now dominated by scrub oak. In the absence of fire, most of these stands have been invaded by mesic species and are succeeding to dry-mesic or mesic forest. Red maple is often among the first mesic species to invade.

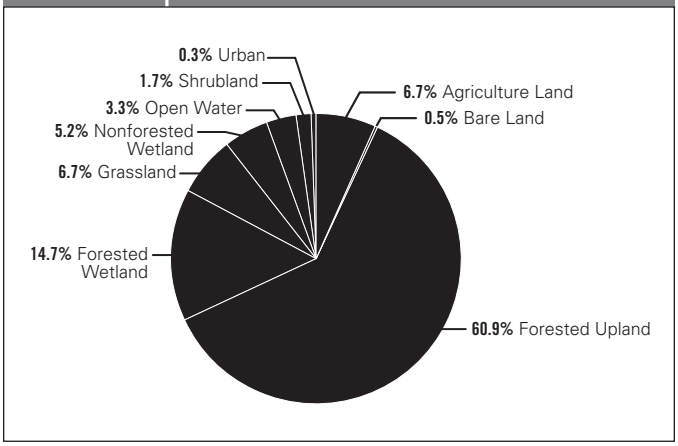
In contrast, Subsection 212Xc—which lies just a few miles to the northwest of the state forest—has much richer soils.

TABLE 3.6 NHI NATURAL COMMUNITY TYPES IN AREAS ADJACENT TO THE PESHTIGO RIVER STATE FOREST

COMMUNITY TYPE	YEAR	STATE RANK	GLOBAL RANK
Bedrock Glade	2003	S3	G2
Northern Dry-mesic Forest	2003	S3	G4
Northern Mesic Forest	2003	S4	G4
Northern Wet Forest	2003	S4	G4
Northern Wet-mesic Forest	2003	S3S4	G3
Open Bog*	2003	S4	G5
Southern Sedge Meadow*	2003	S3	G4
Stream—Fast, Hard, Cold	2003	S4	GNR

**Communities not found within the Peshtigo River State Forest*

FIGURE 3.1 LAND COVER OF THE NORTHEAST SANDS ECOLOGICAL LANDSCAPE *(WISCLAND)*



As a result, the Northern Hardwood forests that have dominated the area since before European settlement can support larger components of white ash, yellow birch, basswood, and American elm. The better-drained depressions are dominated by balsam fir and American elm. The poor-fens and bogs dominated by sedges, sphagnum mosses, tamarack, and black spruce are common in the poorer-drained depressions.

Another large area of richer soils, Subsection 212Tb, lies to the southwest of the outwash plain. The dominant pre-settlement vegetation here was Northern Hardwood forests of sugar maple, beech, hemlock, northern white cedar, and yellow birch. Much of these lands are now in agricultural use.

The Marinette County Forest is one of the largest public lands in the state. As this is a 'working forest', young and medium-aged forests—in a mosaic of relatively small patches—are well represented and provide ample habitat for those species

associated with such vegetation. Older, less disturbed forests, especially in larger patches, are not well-represented even in the county parks. Detailed surveys of the Marinette County Forest property have not been conducted, but among the significant natural features identified are several outstanding aquatic features (including free-flowing stretches of the Peshtigo River and several of its tributaries), undisturbed wetlands, and relatively mature Northern Hardwoods and hemlock hardwoods forests with significant components of beech, hemlock, and locally, white and red pines.

Peshtigo Harbor occupies a strategic location, situated at the junction of the Peshtigo River with Lake Michigan. The mouth of the Peshtigo River features an extensive complex of wetlands such as marsh, meadow, shrub swamp, and lowland forest that are of high significance to native plants and animals, including many rare species. The Peshtigo Harbor unit of the Green Bay West Shores State Wildlife Area is just one in a system of important (based on ecology, economy, recreation, aesthetics) public holdings that occur along the West Shore of Green Bay. Additional survey work is needed for the entire complex of public lands along the West Shore.

In summary, the Peshtigo River State Forest lies within a large landscape shaped by sandy soils and fire. The early vegetation of the region was a fairly open Pine or Oak Barrens community. Currently it's a rare community type in the region and state. Now that wildfires are largely controlled, the upland forest in this area is slowly converting to species more typical of richer soils, such as those found north of the Peshtigo River State Forest. Another large area of richer soils lies a few miles to the south of the state forest and has now been largely converted to agricultural uses.

RECENT HISTORY AND FOREST SUCCESSION IN MARINETTE COUNTY

The upland forests of the Peshtigo River State Forest area have undergone a great deal of change since European settlement. Areas with standing timber were logged off in roughly the same time period as the rest of northern Wisconsin in the last few decades of the 19th century. With fire suppression becoming successful in the 1930's, as well as the extensive planting of pine plantations on abandoned farms and in former Pine Barrens, Marinette County underwent a dramatic transformation. The USDA Forest Service began its' Forest Inventory and Analysis (FIA) program of thorough forest inventories in 1956 with plots scattered throughout each county. These plots allow estimates to be made of the forest cover in larger areas (county wide, for example). Specific data for the state forest is not available, but the county data reflects the types of changes readily observable in the area. (Data supplied by WDNR Forest Statistician Vern Everson, 2002.)

These data show clearly the changes in forest composition in Marinette County over the last 40 years. Red pine has increased by a factor of four, almost entirely as a result of red pine plantations. Aspen and oak have decreased in response to a strong increase in mesic hardwoods—maple, beech, and yellow birch. The amount of non-forested land in 1996 is 38 times less than that in 1956.

RECREATIONAL RESOURCES AND USE

The Peshtigo River State Forest is located in a popular outdoor recreation area in Northeastern Wisconsin. Recreational activities that occur on or near the state forest include fishing, boating, canoeing, kayaking, river rafting, swimming, water skiing, hiking, picnicking, camping, hunting, snowmobiling, ATV riding, and cross country skiing.

The state forest and surrounding area offer a variety of scenic water features and views. Due to the undeveloped shoreline, many of these views can be enjoyed in a natural setting. The two large flowages provide grand vistas of open water while the lower sections provide more intimate views of the free flowing river.

As population increases and the number of seasonal housing units increase, there will be a greater demand for regional recreational opportunities. In the inland lakes area of Marinette and Oconto Counties, the Towns of Silver Cliff, Stephenson, and Townsend are projected to experience high growth in coming years. Areas identified by the Land Legacy report as having high recreation potential include the Peshtigo River and the Chequamegon-Nicolet National Forest. Recreational demand is expected to increase 6.8 % between 1990-2020.

LAND-BASED RECREATION

Camping

Camping is a popular recreational activity within the region. There are some 2,400 campsites available within a 50 mile radius of the state forest. The majority of these sites are privately owned with electric hook-ups. Most of the rustic camping opportunities can be found on municipal, county, state, and federal owned lands. These rustic sites make up about 22 % of the campsites in the region.

Within a 30 minute drive of the Peshtigo River State Forest, there are a number of other public and private campgrounds. With the exception of the county owned Twin Bridges Campground, the seven public campgrounds near the forest are small (15-30 sites), rustic, and without electricity. There are five privately operated campgrounds within the area, ranging in size from 40 to 90 units. Most of these offer electric hook ups and pressurized water.

TABLE 3.7 CAMPSITES WITHIN 50-MILES OF PESHTIGO RIVER STATE FOREST*

REGIONAL CAMPGROUNDS	SITES WITH ELECTRICITY	SITES WITHOUT ELECTRICITY	TOTAL	% OF TOTAL
Federal	22	193	215	9%
State	178	0	178	7%
County	272	140	412	17%
Municipal	230	0	230	10%
Private	1183	185	1368	57%
% Total	1885	518	2403	100%

* This does not include the Potato Rapids Unit

Hunting

Hunting is popular both in the region and on the Peshtigo River State Forest, with abundant public hunting opportunities available on federal, state and county lands. Hunting includes deer, turkey, bear, fox, coyote and small game. There is some waterfowl hunting occurs on the flowages and area lakes.

Biking

Road

The roads in and around the state forest are mostly paved and in good condition for road biking. There is an established 24-mile loop from Crivitz that uses Parkway, Ranch and Caldron Falls roads, and Highway W. The Wisconsin State Bicycle map of this region does show County Highways A, C, X and W as good roads for cycling.

Off-road

Regionally, a number of off-road trails exist on federal and county forestlands along with Michigan and Wisconsin State Parks. A five mile surfaced bike trail will be built on the Governor Thompson State Park and there are some off-road biking opportunities on the forest, although there are no designated trails.

Hiking

Regionally, over 70 km of designated hiking trails exist on the surrounding counties. All of these trails are located on public lands.

Skiing

Regionally, over 70 km of groomed trails exist in the surrounding counties. These trails are all located on public lands.

Horse

Regionally there are 34 miles of trails located on the Chequamegon-Nicolet National Forest.

SNOWMOBILE

Snowmobiling is highly popular in the region with an extensive network of trails. Statewide, and within this region, land based motorized recreation continues to increase in demand. Due to the aging population (almost 1/2 of riders of snowmobiles and ATVs within the state are by persons over the age of 40) and aggressive marketing campaigns, ATV and snowmobile usage continues to gain in participation. Table 3.8 lists regional snowmobile trail miles by county.

ALL-TERRAIN VEHICLES

Regionally, there are over 450 miles of ATV trails, with some of trails on designated roads. Table 3.9 lists trail miles by county. There are also ATVs allowed in Michigan State Forests located in the Upper Peninsula. Currently there are very limited designated ATV trails on the Peshtigo River State Forest, however designated snowmobile trails are used in winter by ATVs.

OUTDOOR EDUCATION/INTERPRETATION

There are limited education/interpretation opportunities within Marinette County. Four museums in the county cover topics from the Peshtigo fire to Menominee Indian logging camps. Within a larger context, the Nicolet National Forest Service does offer two 80 and 65 mile auto tours. There are also 10 interpretive trails within the national forest. There are very few, if any opportunities for guided interpretation within the region.

Adjacent to the forest the Governor Thompson State Park plan will provide an education/interpretation program. When park development is complete, the program will include a nature trail, observation tower, display kiosk, and interpretive center.

WATER-BASED RECREATION

Swimming

Clean water and numerous access points encourage swimming as a recreational activity on area flowages and lakes in the region. Swimming is the second most popular activity. The sand beaches and granite rock structures allow for varied swimming experiences. However, because of the physical nature of the flowages there are very few beaches. Most swimming occurs at the boat landings or County Parks. A beach will also be constructed in the Governor Thompson State Park on Woods Lake.

Fishing

Excellent fishing occurs in and around the state forest. Caldron Falls Reservoir supports a high quality muskellunge fishery and is the only Class A muskellunge water in Marinette County. Currently 1,000 muskellunge fingerlings are stocked annually in the Caldron Falls reservoir. Other fishing opportunities in the Caldron Falls reservoir include largemouth bass, smallmouth

TABLE 3.8 MILES OF REGIONAL SNOWMOBILE TRAILS BY COUNTY

COUNTY	TRAIL MILES
Oconto	467*
Florence	130
Forest	378
Marinette	455
Total Miles of Snowmobile Trails	1,430

Source: Wisconsin SCORP County Supply Datasets, July 2006.
**Includes both state-funded and unfunded trails.*

TABLE 3.9 MILES OF ATV TRAILS BY COUNTY

COUNTY	WINTER	SPRING/SUMMER/FALL
Marinette	215	187
Oconto	0	58
Florence	39	16
Forest	8	8
Total	262	269

Source: Wisconsin SCORP County Supply Datasets, July 2006.

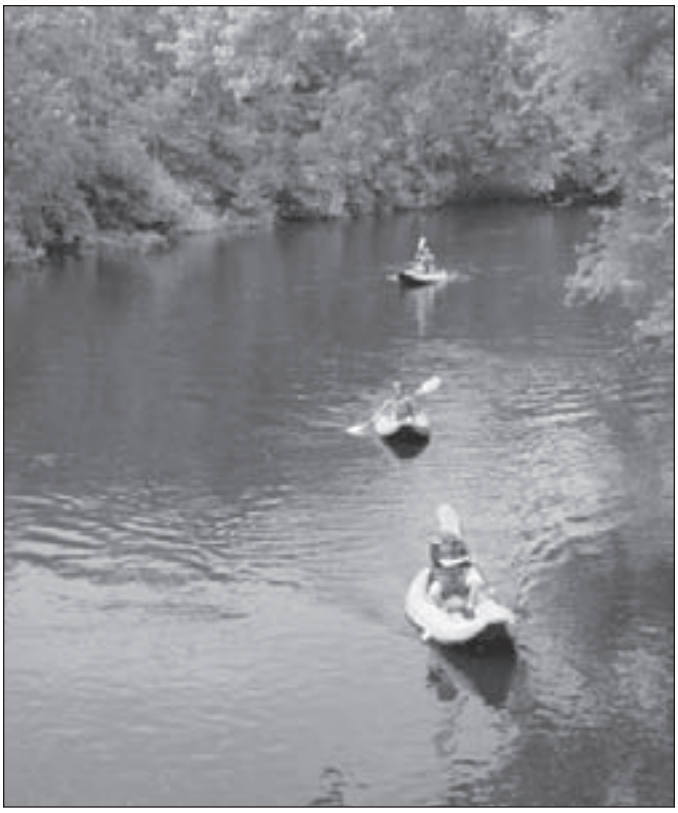
bass, brown trout, bluegill, rock bass, yellow perch, black crappie and pumpkinseed.

High Falls flowage supports an excellent fishery of walleye, largemouth and smallmouth bass. Major panfish species include bluegill, rock bass, yellow perch, black crappie and pumpkinseed.

Johnson Falls Flowage also supports an excellent fishery. Principal gamefish include: northern pike, smallmouth bass, largemouth bass, walleye, muskellunge, brown trout, and rainbow trout. The most abundant panfish species are bluegill, rock bass, yellow perch, black crappie and pumpkinseed. Currently 1,000 - 2,000 rainbow trout are stocked annually in the Johnson Falls reservoir. Abundances of individual species are low and fishing pressure is light, but the reservoir produces some large fish desired by anglers.

Huber and Woods Lakes located in the Governor Thompson State Park support a large mouth bass, northern pike, and pan fish fishery.

Regionally this area offers some of the best trout fishing within the State with numerous Class 1 Trout Streams. A special fly fishing only area is located on a section of the Peshtigo River within the Forest.



Canoeing / Kayaking / Rafting
Abundant whitewater and paddling opportunities exist on both the Peshtigo River and other surrounding rivers and streams.

There are two whitewater segments near the state forest. The Roaring Rapids section of the Peshtigo River just upstream of the forest offers the Midwest's longest continuous whitewater that is runable most of the summer. This four mile long section offers class III-IV whitewater. Commercial rafting outfitters provide easy public access to this section with the take out for these trips at boat landing 12 - at the northern end of the Peshtigo River State Forest property.

The other whitewater in the area is the Seymour Rapids river section just downstream of the Johnson Falls Dam. It runs from Johnson Falls Road to Kirby Lake Lane or Shaffer Road. This seven to eight mile section offers class I-III whitewater but is seldom run compared to other segments of the Peshtigo.

Regionally, the Brule, Pike, Pine, Popple and Menominee offer other whitewater boating opportunities. The Pike River in Marinette County is one of three state designated wild rivers in Wisconsin along with the Pine and Popple in Florence County.

The flowages and the lakes in the state forest area offer excellent white water paddling opportunities. Canoe travel time from boat landing 12 (on Caldron Falls Reservoir) to the Johnson Falls dam is approximately 11 hours. Marked portage routes exist around the dams. The two small lakes in the Governor Thompson State Park are designated non-motorized and offer additional paddling opportunities.

Power Boating
Power boating is a popular activity on both Caldron and High Falls flowages. Caldron Falls offers over five miles of boating opportunities while High Falls offers over seven miles. The dam prevents making continuous connections between the flowages by motorboat.

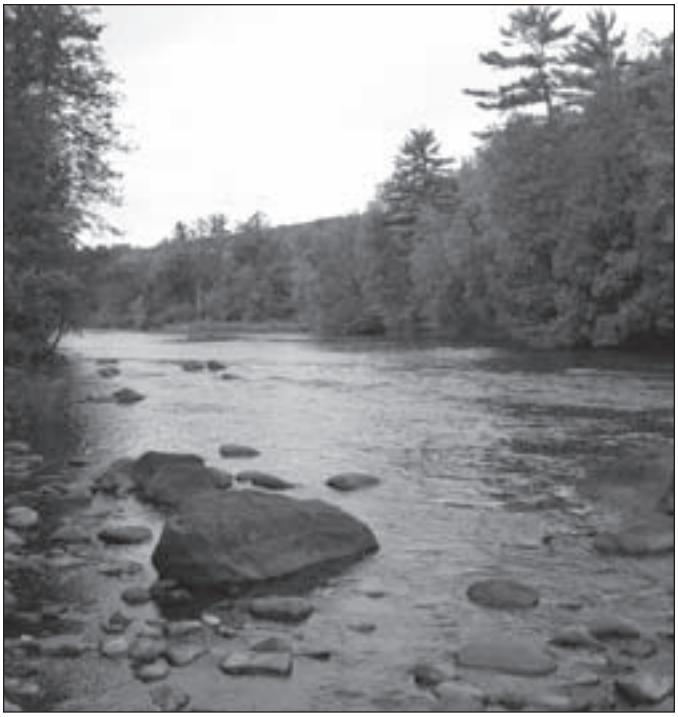
Larger watercraft are attracted to the large reservoirs. There are 13 rustic to semi-improved boat landings on Caldron and High Falls. Twin Bridges County Park has a $2 daily or $10 annual entrance fee.

Personal Watercraft
Personal watercraft use is common on both flowages. The existing launch sites allow for easy access. While not as popular as motor boating, there has been an increase in this activity.

CULTURAL RESOURCES

The Peshtigo River State Forest has been used for recreation and commercial timber harvest for many years and as a result has contributed greatly to the local and regional economies. In addition to this, the land and water are important to local users, both for recreation and as income derived from recreational use by non-local users. Because there is such a long history of public use, there is the potential for resistance by both local and non-local users as recreation and forest management objectives for the property change. The DNR is committed to involving the public in the planning process and keeping them appraised of any changes in either use or forest management.

As part of the 1837 and 1842 treaties, the Native Americans gave up timber harvesting rights. However, they retained the rights to such activities as hunting, fishing, as well as the gathering of firewood, boughs, tree bark, lodge poles, marsh hay, wild rice, and maple syrup. These activities were retained because it has been determined by the courts that these are usual and customary activities of the Chippewa at the time the treaties were signed.



SOCIO-ECONOMIC TRENDS

Marinette County and the surrounding region are similar to other northern counties in demographic and economic trends[10]. The region is susceptible to seasonal variations in residents and economic stimuli and is changing both demographically and economically. The population is becoming both more urban and older while the economy is shifting from resource extraction and manufacturing to a service-sector based economy.

POPULATION TRENDS

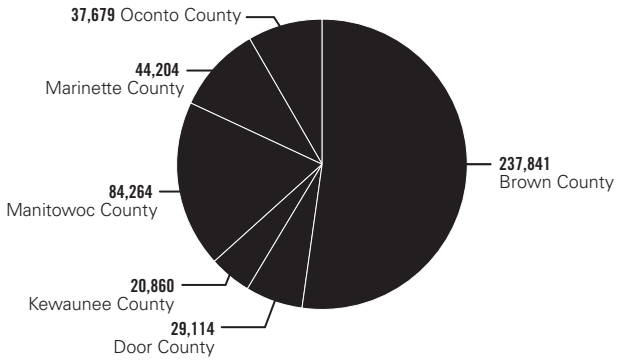
The population of Marinette County has experienced relatively stable growth during the 1990's. The current population of 43,417 has increased 7% since 1990. More than 25% of all residents reside within the City of Marinette. Surrounding counties have grown in the range of 5 to 10%. Statewide, population increased 9.6% during this same period.

Most of the Peshtigo River State Forest is in the Town of Stephenson, which increased in population by 2% since 2000. There was a 34% increase in population between 1990 and 2000, mostly due to immigration. This increase accounted for the largest total person increase of any township within Marinette County.

POPULATION DISTRIBUTION

Population distribution and densities vary within the region, with a decrease in population from south to north. Figure 3.2 shows the regional population distribution. With growing population densities in Green Bay and the Fox River Valley—and

FIGURE 3.2 POPULATION DENSITY OF COUNTIES SURROUNDING THE PESHTIGO RIVER STATE FOREST



[10] See Marinette County Workforce Profile (Wisconsin Department of Workforce Development 2004), the Census Bureau (http://www.census.gov/), and Wisconsin SCORP Regional Demographic Profile (2005-2020).

TABLE 3.10 POPULATION PROJECTIONS FOR THE UPPER LAKE MICHIGAN COASTAL REGION

COUNTY	ESTIMATE	PROJECTION		PROJECTED INCREASE		AVERAGE ANNUAL% INCREASE	
	2004	2010	2020	2004-2010	2010-2020	2004-2010	2010-2020
Brown County	237,841	248,529	269,812	10,688	21,283	0.75%	0.86%
Door County	29,114	30,112	30,800	998	688	0.57%	0.23%
Kewaunee County	20,860	21,343	22,457	483	1,114	0.39%	0.52%
Manitowoc County	84,264	86,307	89,860	2,043	3,553	0.40%	0.41%
Marinette County	44,204	44,557	45,251	353	694	0.13%	0.16%
Oconto County	37,679	39,670	43,018	1,991	3,348	0.88%	0.84%
Upper Lake MI Coastal Region	453,962	470,518	501,198	16,556	30,680	0.61%	0.65%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal Region

their relatively close proximity to the Peshtigo River State Forest, this "northwoods" area will continue to be a strong attraction for recreation and second home development. Table 3.10 shows population trends for the area. The Peshtigo River State Forest is more readily accessible from these population centers than most of the county and national forest lands.

SEASONAL HOUSING AND TOURISM

Area residents constitute much of the demand for outdoor recreation, but a certain amount of demand also comes from non-residents like seasonal home owners and tourists. Tables 3.11 and 3.12 show the increasing importance of seasonal housing and tourism in the region as well as the percent change of seasonal housing from 1950-2000. Approximately 10% of all housing is used for seasonal or recreational use compared to only 6.3 % for the state as a whole. Marinette County has a relatively high proportion of seasonal homes. In some areas of this region, the majority of the housing units are used seasonally and at least 20% of all workers are employed in tourism related industries.

ECONOMIC TRENDS

Marinette County is comprised mainly of tourism and manufacturing sectors. One-third of the jobs in Marinette County come from the manufacturing sector which has remained fairly consistent over the last five years. However, there is a disjunct between the fastest growing economic sectors and sectors that expect the most employment opportunities. There are fewer positions with the fastest growing economic sectors (e.g. computer technologies) which offer higher wages yet are easily transported to other regions of the state and country. Most job openings are low-wage service-sector jobs, which have the most availability.

TABLE 3.11 TABLE 3.11: SEASONAL HOUSING AND TOURISM IN THE UPPER LAKE MICHIGAN COASTAL REGION

COUNTY	POPULATION UNITS	HOUSING	%SEASONAL IN TOURISM	%EMPLOYED
Brown	226,778	90,199	0.50%	7.30%
Manitowoc	82,887	34,651	1.50%	6.30%
Marinette	43,384	26,260	28.90%	8.40%
Oconto	35,634	19,812	24.40%	7.30%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal Region.

TABLE 3.12 CHANGES IN SEASONAL HOUSING UNITS IN THE UPPER LAKE MICHIGAN COASTAL REGION 1950-2000

COUNTY	NUMBER OF SEASONAL UNITS						PERCENT SEASONAL		
	1950	1960	1970	1980	1990	2000	1960	1980	2000
Brown County	2,712	676	490	407	346	414	2.0%	0.7%	0.5%
Manitowoc County	1,304	464	442	664	557	518	2.0%	2.2%	1.5%
Marinette County	1,588	2,739	3,700	7,442	8,532	7,586	20.0%	33.0%	28.9%
Oconto County	2,966	3,061	2,131	6,272	6,666	4,837	29.0%	37%	24.4%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal

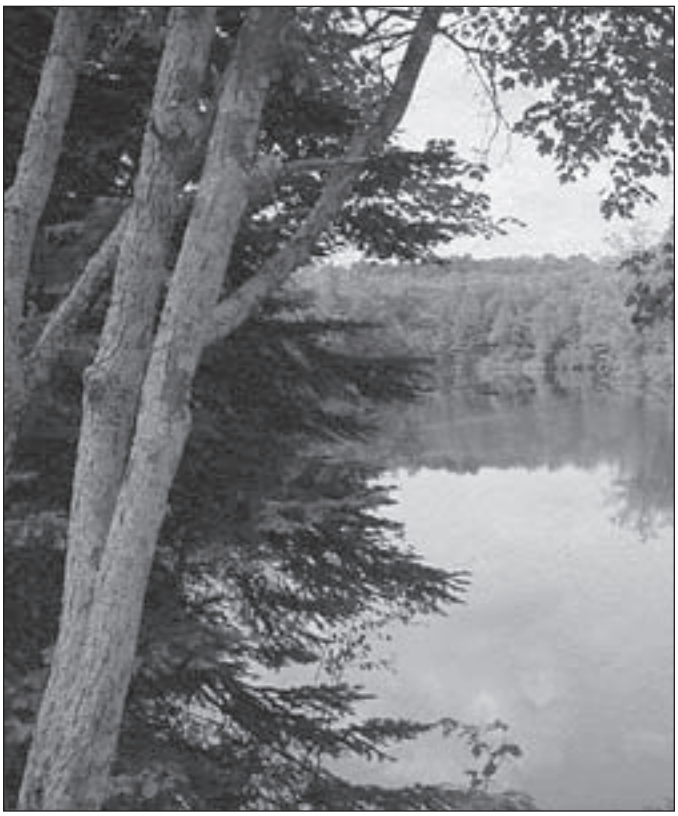
TABLE 3.13 NATURAL AMENITIES, RECREATION, AND POPULATION CHANGE

COUNTY	LAND COVER		POPULATION CHANGE			HOUSING CHANGE		
	% Forest	% Wetland	1970-1990	1990-2000	2000-2004	1970-1990	1990-2000	2000-2004
Marinette County	53.1%	22.9%	13.2%	7.0%	1.9%	65.6%	2.4%	5.4%
Oconto County	38.9%	21.2%	18.3%	17.9%	5.7%	57.6%	5.2%	9.0%
Brown County	7.4%	7.3%	23.0%	16.5%	4.9%	65.4%	20.7%	8.7%
Manitowoc County	12.1%	13.3%	-2.3%	3.1%	1.7%	25.3%	8.8%	4.3%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal

Thirty-three percent of the employees in Marinette County are employed in factories compared with 24% statewide. The service industry (24%) and retail trade (19%) account for the next largest work sectors in the county. The paper industry also plays a major role in the area's economy, providing mill, forest products and service-related employment. The County of Marinette is the largest non-manufacturing employer in the region. The large flowages of the Peshtigo River State Forest play a major role in the Town of Stephenson's business economy, drawing tourists to the area from around the region and state. County-wide tourism contributed $91.1 million in economic impacts in 2001.

In 2000, Marinette County had 26,260 housing units. The Census Bureau reports 28% of housing units are used for seasonal, recreational or occasional use. Within the Town of Stephenson this number increases to 62% of all housing units used for these purposes. Since the county's economy hinges predominately on seasonal use, Marinette County experiences slightly higher poverty rates (+2%) higher then the statewide average.



PROPERTY CAPABILITIES, LIMITATIONS, AND OPPORTUNITIES

From a regional perspective, there are a number of elements to consider in the relationship of this property to the local setting. Listed below are elements that define the Peshtigo River State Forest and its context within the region.

MANDATORY MANAGEMENT REQUIREMENTS

State Forest Designation

The Regional and Property Analysis presented here is an important step in the process of developing a master plan for the Peshtigo River State Forest. The Department's master planning rule (Wisconsin Administrative Code NR44) identifies that this analysis and the final property master plan must meet the statutory purpose of the property's designation. In this case, the property is a state forest as defined in Wisconsin Statutes 28.

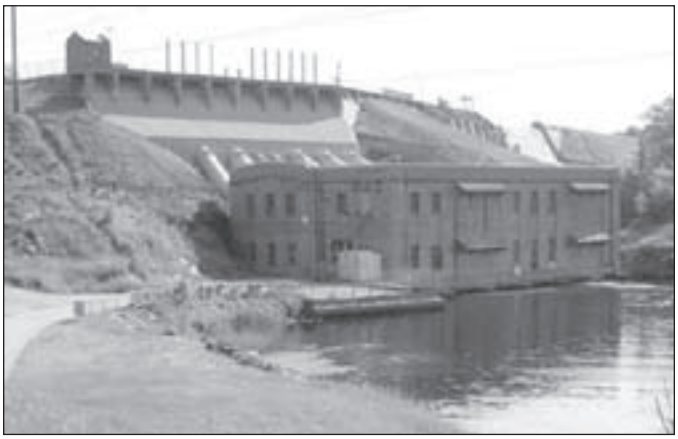
State forests such as the Peshtigo River State Forest are an important part of the Department's broader mission to provide leadership in "all matters pertaining to forestry within the jurisdiction of the state…and advance the cause of forestry within the state" (§28.01). In order to define this mission, the purposes and benefits of state forests are outlined in the following language of 28.04 (2):

> (a) The department shall manage the state forests to benefit the present and future generations of residents of this state, recognizing that the state forests contribute to local and statewide economies and to a healthy natural environment. The department shall assure the practice of sustainable forestry and use it to assure that state forests can provide a full range of benefits for present and future generations. The department shall also assure that the management of state forests is consistent with the ecological capability of the state forest land and with the long-term maintenance of sustainable forest communities and ecosystems. These benefits include soil protection, public hunting, protection of water quality, production of recurring forest products, outdoor recreation, native biological diversity, aquatic and terrestrial wildlife, and aesthetics. The range of benefits provided by the department in each state forest shall reflect its unique character and position in the regional landscape.
>
> (b) In managing the state forests, the department shall recognize that not all benefits under par. (a) can or should be provided in every area of a state forest.
>
> (c) In managing the state forests, the department shall recognize that management may consist of both active and passive techniques.

FEDERAL ENERGY REGULATORY COMMISSION

The Federal Energy Regulatory Commission (FERC) is the federal agency with jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, and oil pipeline rates. FERC is an independent regulatory agency within the United States Department of Energy.

The Peshtigo River State Forest is required to meet the licensing requirements of FERC[11] for several projects on the Peshtigo River: Caldron Falls, High Falls, Johnson Falls, Sandstone Rapids, and Potato Rapids. The WDNR and WPSC have individual roles and responsibilities for managing the Peshtigo River Flowages. However, each is dependent upon the other to successfully fulfill its management objectives. WPSC and the WDNR will continue to consult regularly to maintain clear understanding of their management roles and objectives and cooperative approaches through lease or land use agreements. Through the Peshtigo River State Forest Master Plan, the WDNR will implement a multi-use resource program and provide compatible recreation. Under the authority of the FERC license, WPSC will continue to implement the required and approved flowage operation and related environmental and recreational plans. The WDNR may petition FERC if any major issues arise. The WDNR will be maintaining a 200-foot buffer zone (Shoreland Management Overlay Zone) along the Peshtigo River shoreline throughout the forest.



See *Wisconsin Public Service Corporation Peshtigo River Projects* (1998).

ECOLOGICAL SIGNIFICANCE AND CAPABILITY OF THE PESHTIGO RIVER STATE FOREST

About three-quarters of the soils on the Peshtigo River State Forest and its, the Northeast Sands Ecological Landscape, are excessively drained, nutrient–poor sandy soils with bedrock near or above surface in many locations. The dry uplands are punctuated by pockets of poorly drained wetlands. These soil conditions significantly limit the range of forest species or the types of natural communities that can thrive here. Historically, this area was covered by Pine and Oak Barrens, which are adapted to drought and fire conditions.

Today, with fires controlled, the dry uplands on the Peshtigo River State Forest and across the Northeast Sands Landscape have been converted or are converting, to aspen, oaks, and maples, or have been planted to pine plantations. Currently, on the Peshtigo River State Forest aspen and scrub oak make up about 50% of the forest cover, with red pine, other oaks, red maple, jack pine and lowland forest types making up the remainder.

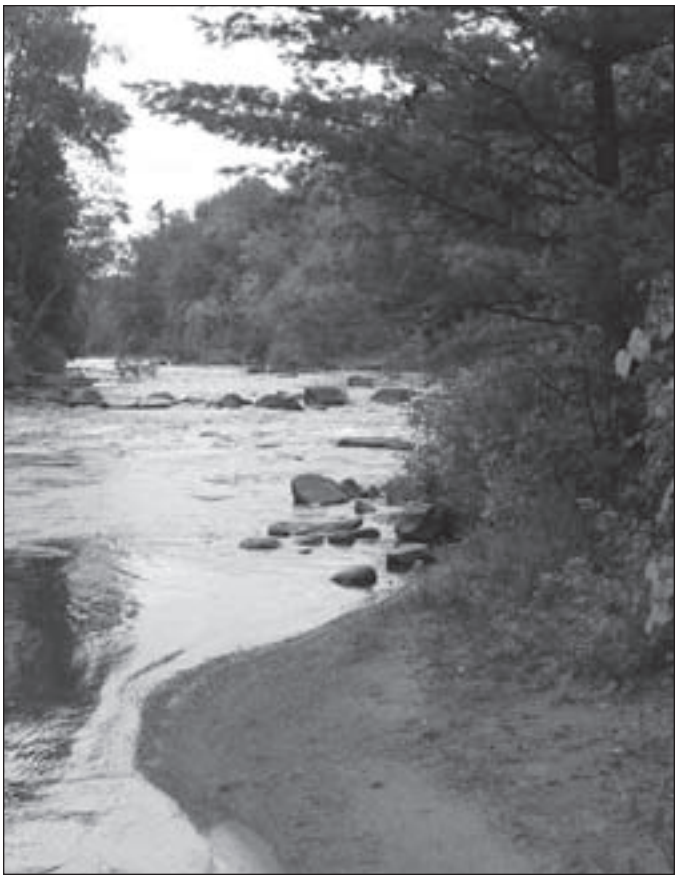
FOREST MANAGEMENT CAPABILITY

The Forest Habitat Classification System (FHTCS) indicates that the Peshtigo River State Forest is especially well-suited for management of pine (jack, red, and white), although red maple is well-represented. Red and white pines have the best growth potential, whereas red oak and red maple sawtimber is more modest. Pines are best suited for wood production, but the maintenance of deciduous trees is desirable for wildlife habitat, soil nutrient, and aesthetics benefits. Given the generally poor sandy soils and steep slopes in some areas the Peshtigo River State Forest does not have the capability for high production of either fiber or sawtimber. Timber management is further constrained by the property's relatively small size and narrow, linear shape. That being said, the Peshtigo River State Forest does offer some opportunities for timber management. Much of the areas that are currently in poorly productive scrub oak could be converted to white, red, or jack pine, or other hardwood production.

REGIONAL ECOLOGICAL NEEDS AND OPPORTUNITIES

Native Communities

Two of the native communities found within the Peshtigo River State Forest have been identified by the Ecological



Landscapes of Wisconsin Handbook as being Major Ecological Management Opportunities for the Northeast Sands Ecological Region. They are the Northern Dry-mesic Forest and Northern Wet-mesic Forest

While the barrens community once dominant here is rare in the region and state, opportunities for its restoration are highly limited on the Peshtigo River State Forest. The Peshtigo River State Forest has several small highly degraded Pine-Oak Barrens sites that may have some restoration potential, but there are other more suitable sites within this Ecological Landscape and state. Additionally, barrens restoration would be problematic on the Peshtigo River State Forest due to the limited acreage available and the limited ability to use fire here as a management tool.

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES

Twelve rare plant species and 19 rare animal species have been documented in or near the Peshtigo River State Forest. Most of the rare plants are associated with either dry uplands or wetlands sites. Three of the plants are associated with the Northern Dry-mesic and Northern Mesic forest communities.

ECOLOGICAL SIGNIFICANCE AND CAPABILITY OF THE PESHTIGO RIVER STATE FOREST

The majority of the rare animals are associated with aquatic or wetland habitats. Of special note is the Peshtigo River; it provides important habitat for many of these species, including five that are globally rare. Dry uplands are important for some species. Currently the State Forest lacks large tracts of mature, closed-canopy forest needed to sustain the Northern Goshawk or the Red-shouldered Hawk. However, there is some potential to create suitable habitat on the Forest over time.

WILDLIFE SPECIES OF GREATEST CONSERVATION NEED

There are a number of wildlife species identified as species of Greatest Conservation Need within the Northeast Sands Ecological Landscape and have a high or moderate probability of occurring within the Peshtigo River State Forest. Examples include the Whip-poor-will, Least Flycatcher, Veery, Northern Flying Squirrel, wood turtle, and Mink Frog. All of these species are associated, in part, with natural communities documented on the Peshtigo River State Forest, such as the Northern Dry-mesic Forest, the Northern Wet-mesic Forest, or with cold water stream native communities. The maintenance, restoration, and protection of these native community habitats would benefit these wildlife species of need. Managing to maintain or improve the populations of these wildlife species is a high Department priority.

GENERAL ECOLOGICAL NEEDS

The county forest and many private forest lands are managed with a focus on the production of forest products. As such they generally are young to medium aged forests in a mosaic of relatively small patches. Aspen predominates, followed by northern hardwoods. Older, less disturbed forests, especially in larger patches, are under represented habitats.

Avoiding or eliminating threats to natural communities and rare species are important management needs if long-term ecological objectives are to be met. Protective actions that can be taken include avoiding management actions, such as plantations, in sensitive areas that would cause ecological simplification, and guarding against the introduction of invasive species.

RECREATIONAL SIGNIFICANCE AND CAPABILITY OF THE PRSF

The forest is located in a highly popular outdoor recreational area in Northeast Wisconsin. While the Peshtigo River State Forest is a small property within a vast area of public land, due to the Forest's location and unique resources it is and will continue to stand out and grow as a primary recreation destination.

The waters, the flowages, and the river are the Peshtigo River State Forest's defining feature. From a regional perspective, in a region with few lakes and even fewer large lakes for power boating, the flowages are a huge draw for all types of water recreation. The rapid-filled reach of river on the flowage adds a diverse scenic and recreational attraction. Adding greatly to the appeal of the Forest is the undeveloped natural appearing shoreline, punctuated by unique granite rock outcrops, giving the area Canadian flavor. The high scenic qualities are highly prized by area residents and visitors.

The Forest's location is another factor contributing to its popularity and high long-range recreational demand. The Peshtigo River State Forest area lies only 50 miles north of Green Bay just west of Highway 141 on the southern edge of what people commonly call the "north woods". It's easily accessible and only about two hours or less drive from Green Bay and the other Fox Valley cities, a fast growing metroplex of people. The Peshtigo River State Forest area is currently highly popular for second home ownership and development and tourism. Second home development in the Peshtigo River State Forest area and population growth in the region, especially the Fox Valley metro area, will likely yield a strong and growing demand for outdoor recreational opportunities on the forest for many years.

The Peshtigo River State Forest and Governor Thompson State Park have the potential to have a shared, mutually supportive recreation program. A primary focus of state parks is to provide areas and facilities for rather intensive recreational uses, such as modern campgrounds, high density trail systems, and often nature interpretation centers. Given larger land base on state forests and broader mission, recreation on state forests often focuses on less developed and more rustic types of recreation. There are abundant opportunities for integration of recreation facilities, programs and opportunities between the two properties.

Currently water based recreation is one of the primary recreational reasons people visit the Peshtigo River State Forest and adjoining area. The participation in and demand for land based recreation on the Peshtigo River State Forest will likely grow significantly in the future after Governor Thompson State Park's facilities are developed and more people "discover" the park and forest. The park and forest will likely become a significant year-round recreational destination.

WATER RECREATION

With 15 boat landings there is abundant access to Caldron Falls and High Falls Flowages and the Fly-fishing section of the river. Even with 440 parking spaces, on summer weekends and holidays almost all the landings exceed their capacity. Additional parking and other improvements at the landings are needed.

While boating being the most popular activity on the state forest, swimming is the second. However, due to the topography of the flowages there are few beach sites and the only designated swim area is at the Town of Stephenson Park on High Falls Flowage. Most swimming takes place at undesignated locations near boat landings indicating a need for designated, safe swim areas.

RECREATIONAL SIGNIFICANCE AND CAPABILITY OF THE PRSF

LAND-BASED RECREATION

Recreational use and facility development on the forest are constrained by a number of factors, including: highly erodible sandy soils, steep slopes, scattered wetlands, the long, narrow shape of the property, and the fact that the flowages and river prevent ready access from one side of the property to the other. While the property is capable of supporting sustainable trails and other developments many factors will enter into their site selection and design and some areas will not be suitable. Because of these limiting factors, the land within the current forest boundary is well suited for non-motorized recreational uses.

CAMPING

Rustic style campgrounds comprise only about 22% of the campsites in the region. Additional rustic camping opportunities may be in demand in this area. The presence of primitive, watercraft accessible camping on the flowages is a highly unique recreational opportunity that is important to Forest visitors. It should be maintained wherever it is environmentally compatible.

TRAILS

Hiking and cross-country skiing

Currently trail uses are a minor recreation component of the Forest with only eight miles of cross-country ski and hiking trail, 20 miles of snowmobile/winter ATV trail and no designated bike or horse trails, although these uses are allowed on Forest roads. A five mile paved bike trail and about 11 miles of cross-country hike/ski trails are planned for Gov. Thompson State Park. Regionally about 40 miles of additional hiking/ski trails are provided on various locations on public lands within Marinette and the surrounding counties. These trails likely have little effect on the ultimate demand for Peshtigo River State Forest and Governor Thompson State Park as non-motorized trail use often draws from local area residents or are associated with out of area visitors attracted to the area to enjoy a variety of activities.

Horse trails and camping

Currently public horse trails in the region are quite limited. The only designated horse trails in the area are on the National Forest. There is a strong demand for equestrian opportunities in the Peshtigo River State Forest area. This is reflected by the 2006 draft SCORP study and the strong interest shown by local and regional equestrians during the planning of the Gov. Thompson State Park plan. Horse riding opportunities could not effectively be constructed on the park due to its small size. The Department made a commitment at that time to develop a horse trail system and campground in conjunction with Peshtigo River State Forest on a separate, appropriate location within the Peshtigo River State Forest.

Motorized trails

Like all other areas across northern Wisconsin snowmobiling is highly popular and demand remains strong. There is an extensive regional snowmobile trail network of nearly 1,400 miles stretching across Marinette and the adjoining counties. There are nearly 450 miles of trail in Marinette County alone, approximately 25 of these miles are on the Peshtigo River State Forest. A significant number of miles of snowmobile trails are also open to ATVs in the winter, including a 20 mile portion crossing the Forest. Given the limitations of the Forest's size and shape, it can not provide significant additional miles of trail; however, maintaining current trail linkages for the regional trail network is important. There may be opportunities to redesign or relocate existing trails to provide a more effective and sustainable trail network.

There is also a 200 mile year-round ATV trail network in the region, with Marinette County being the leader offering riders over 150 miles. About 100 miles are on designated town roads. With ATV ownership soaring over the last several years the demand for public trails far exceeds the supply. This demand is projected to remain strong for many years. The Peshtigo River State Forest has limitations for the development of additional mileage of year-round ATV trails due to its long-narrow shape, highly erodible soils, wetlands, and steep slopes in some locations. The presence of a number of important and sensitive native community sites creates further limitations for ATV trail routes on the Forest. While the Peshtigo River State Forest has limited opportunities to provide significant additional year-round ATV riding trail miles, there may be opportunities in some locations to provide short connector trails across the forest.

SUMMARY

The Peshtigo River State Forest is especially well-suited to be managed as a backdrop for recreation—it has high recreation use and long-term potential for growth, particularly in association with Governor Thompson State Park. There is some potential to expand or construct new trails and other facilities on the property; however, careful siting is needed because of soil, slope and other limitations of the property.

The scenic qualities of the property are some of its greatest assets. Much of the forest is within the viewshed of the flowages and river. The Forest does not have a high capability for the production of timber products, but management opportunities are present. Several regionally significant native communities on the property offer management opportunities. Management and protection of these sites would also benefit many rare plant and animal species or wildlife species of conservation need.